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The Strategic Model of Innovation Clusters: Implementation of Blue Ocean Strategy in a typical Greek Region

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Abstract

Innovation Clusters are “groupings of independent undertakings, (innovative start-ups, small, medium and large undertakings, as well as research organisations), operating in a particular sector and region and designed to stimulate innovative activity by promoting intensive interactions, sharing of facilities and exchange of knowledge and expertise and by contributing effectively to technology transfer, networking and information dissemination among the undertakings in the cluster”. In addition: knowledge - driven, specialise in innovative activities of high added - value and strongly oriented towards international markets. In order to develop sustainable development and successful entrepreneurial ventures due cluster, we can implement innovative strategic model such as Blue Ocean Strategy approach. Blue Ocean Strategy suggests that an organization should create new demand in an uncontested market space, or a "Blue Ocean", rather than compete head-to-head with other suppliers in an existing industry. The cornerstone of Blue Ocean Strategy is 'Value Innovation'. A blue ocean is created when a company achieves value innovation that creates value simultaneously for both the buyer and the company. The innovation (in product, service, or delivery) must raise and create value for the market, while simultaneously reducing or eliminating features or services that are less valued by the current or future market. Into this specific paper there is going to be examined how we should apply the 'blue ocean' concept in a Greek typical region, to enforce cluster development, to implement a new business model and to identify reliable directions for innovation policy development.

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Keywords: Innovation, Cluster, Blue Ocean, Strategic Model , Region

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1. Introduction

Nowadays clusters are considered as important mechanisms for promoting innovation, supporting growth in specific sectors and facilitating the industrial development. Clusters can be created either through a bottom-up approach, that is by firms and agents that already collaborate and have established relationships, formal or informal, or a top-down approach, by a specific policy mix, in the context of an overall industrial policy (Boekholt, P. 1997). In any case, their role in the economy has been widely discussed among scholars and policy makers (Crescenzi, R., Rodríguez-Pose, A., & Storper, M. 2007). However, research especially on the policies regarding cluster formation is not always on the same line of argument, as there are various different opinions on their scope, sectoral orientation, agent's composition etc.

Precise definitions on what makes up a cluster are rather difficult to develop, given that there is no general consensus. The term "cluster" became widely articulated in its present form in the early 1990's through the work of Michael Porter (Porter, M. 1990, 1998a, 1998b). Porter suggests that clusters are geographic concentrations of interconnected companies and institutions in a particular field. Clusters encompass an array of linked industries and other entities, important to competition. They include for example, suppliers of specialized inputs such as components, machinery, and services, and providers of specialized infrastructure. Clusters may involve downstream operations to channels and customers, but also to upstream operations to raw materials producers, manufacturers of complementary products or other firms in complementary industries, which may leverage common skills, technologies, or inputs. Finally many clusters include governmental and other institutions-such as universities, standards-setting agencies, think tanks, vocational training providers, and trade associations that provide specialized training, education, information, research and technical support.

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Main Characteristics of Innovation Cluster:

- Promotes business development activities of its members at national & international level (supports the search for strategic partners, promotes companies in international events, supports out-licensing/in-licensing activities)
- Organizes company missions internationally, events for knowledge exchange, business partnering & technology transfer events
- Creates collaborative networks with international clusters
- Creates links for access to risk capital and VC firms
- Promotes common positions of its members to the national authorities for resolving issues relating to legal / regulatory framework in the field of its activity
- Supports the training for its members

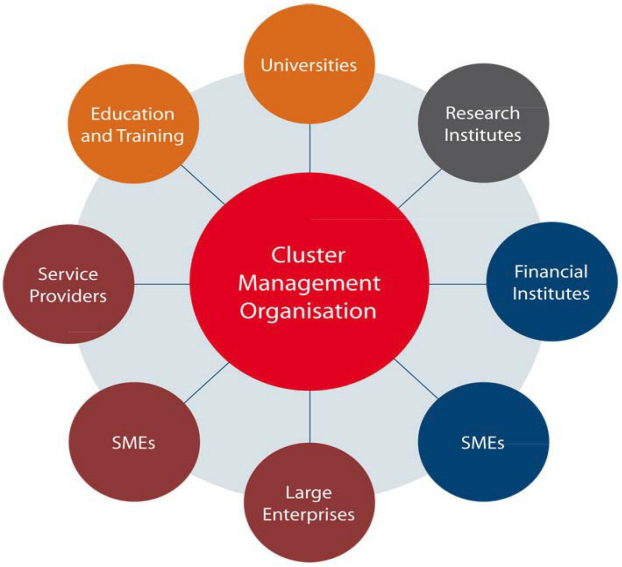

Fig. 1: Main types of actors gathered in a cluster

Region of Attica

Attica has an above average innovation capacity, compared to other regions in the country. However, most of the organizations that report R&D expenditures and conduct respective activities in the region do not necessarily have a specific mission on regional level but rather on a national one. Attica, therefore, hosts a range of organizations that while they offer significant RTDI potential, they do not currently strongly support regional research or innovation priorities and regional development projects (Reid A, Komninos N, Sanchez J., Tsanakas P. 2012).

Moreover, the region of Attica is the most important Greek region within the national innovation system, with a disproportionate number of research activities, expenditure and researchers concentrated in one place, both with regard to the private and public sector. This concentration was the result of high population density, the presence of a large number of firms, the favorable geographic position of the region, the relatively developed logistics and transport infrastructures and above all for proximity reasons to the central government. Despite these positive trends, on European level the region of Attica is still grouped with Medium – Low innovators (Nioras A., 2012).

The region is faced by a series of significant development problems, which were present even before the crisis hit employment levels hard. Since the Olympics games, the competitiveness of Attica has gradually eroded, due to the lack of a development strategy, and with increasing economic, social and environmental problems. The sustainability of regional economic development is seriously threatened due to the loss of natural land, urban sprawl, high levels of air, water and land pollution, coastal encroachment, water mismanagement, a waste crisis and the lack of urban green. Attica is characteristic of the structurally unsound Greek growth model based on domestic consumption, inefficient and costly public services and insufficient investment into knowledge intensive businesses. The Attica region is weakly specialised and, notably, lacks specialisation in high-tech manufacturing and knowledge intensive service sectors. The main specialisation is in pharmaceuticals, financial services, transportation & logistics.

Concerning clusters in the Region of Attica, there are a number of mature clusters including those supported by Corallia Clusters initiative (Nano/Microelectronics-based Systems and Applications Cluster, Space Technologies and Applications Cluster, Innovative Gaming Technologies and Creative Content cluster) as well as the Life Sciences Cluster (HBio). There is also a number of dynamic organic clusters in the field of pharmaceuticals, telecom/ICT, chemical products, entertainment, processed food, tourism & hospitality that could be further developed through appropriate policies mobilizing the potential cluster actors (Reid A, Komninos N, Sanchez J., Tsanakas P. 2012).

The existing clusters are knowledge-intensive and thus are based on relevant R&D capacity in specific sectors. On

the other hand, the existing clusters promote the innovative products and services (excellent research results exploited and commercialized) released thus making research results attractive for investment.

As far as the private sector concerns, various multinational companies have established R&D activities in Attica, such as Samsung, Nokia Siemens Networks and Microsoft, while the majority of the companies, members of the three clusters supported by Corallia is also located in Attica (Reid A, Komninos N, Sanchez J., Tsanakas P. 2012).

In addition, although Attica has the highest concentration of higher education, research institutes and businesses in Greece, there is a lack of stakeholder involvement and collaborative participation in the design of research and innovation policies. The concentration of public and higher education R&D activities in Attica is striking. Only in human resources for science and technology, Attica is accounting for 47% (or 903,000 people) of the total on national level in 2011 (Eurostat) and more specifically in high-tech manufacturing and knowledge intensive services.

So far, the main coordinator for RTDI policies has been the national General Secretariat for Research and Technology (GSRT). The competencies ceded over the years to the GSRT have overshadowed the role of regional authorities and regional stakeholders. In the current and past programming periods, business community, higher education and research sector representatives participated and provided input during the consultation phase of the ROP, but had limited influence on strategies formulated by the central government agencies. Towards the new programming period and according to European R&D policies, regions play a more active role as they are responsible for coordinating public consultation process among regional innovation actors in order to collect all respective regional recommendations aiming to form smarter and more targeted regional innovation strategies.

Concerns (weaknesses and barriers):

- Despite the high growth rates, the expansion of the economy is not innovation driven and the contribution of technology intensive sectors in value added is marginal. Mobilization of resources by the private sector is very low (European Communities, 2010).
- The low investment in research by the private sector is a result of the very poor demand for research based knowledge, reflecting the structural characteristics of the Greek economy. A combination of factors including dominance of low-tech sectors, significant institutional and bureaucratic obstacles and a volatile policy environment orient business activities towards less knowledge intensive and lower value added segments of the economy. Also, the low absorptive capacity of the business sector is both a cause and effect of the low demand for knowledge.
- The weak linkages between businesses and the public research sector constitute a major problem resulting in a typical supply driven system where orientation and priorities are driven by funding opportunities and not by market demand. This has affected the exploitability of the knowledge produced, as well as the knowledge circulation and exploitation patterns.
- Mobilization of resources by the government is insufficient. Public funding of R&D as a percentage of general government expenditure is half the EU average. At the same time dependence on Structural Funds is rather high as their contribution amounts to 42% of the direct government funding on R&D resulting in the fragmentation of the planning and respective funding, and on a complex and rigid management structure slowing down the implementation of the research policy (European Communities, 2010).
- Most of the underlying causes of low demand for new knowledge and low investments in research are related to other policy domains such as innovation, education, employment and competition policy. Therefore, the scope of the policy mix needs to go beyond the boundaries of research policy.

Consequently some of the **main challenges** concerning the regional and national research policy are:

- Separate out regional and national policies. Regional priorities and policies should be made distinct from national ones and should result from a consultation involving regional stakeholders.
- Achieve high coordination, in terms of objectives, resources and means, between research policy and policies such as innovation, education, industrial, employment and competition policy.
- Rise of public funding with gradual lowering the dependence on Structural Funds as well as restructuring and simplification of the management system.

- Increase R&D investments in the private sector. Development of industrial R&D activities that will create opportunities for cooperation with academia and increased mobility of researchers enabling academics to move from their university environments into the market place in order to exploit their knowledge through the creation of spin offs (European Communities, 2010).
- Strengthen knowledge intensive services. Cooperation between academia and industry over specific R&D projects, and collaboration within long term contracts for the provision of knowledge intensive services from the former to the latter
- Bridge the gap of the linkage between business and public research sector.
- Promote, establish and strengthen clusters. Raise awareness about thematic networks and clusters so that companies, academic and research organisations join them and benefit from them.

2. Methodology: The Blue Ocean Strategy

Blue Ocean Strategy suggests that an organization should create new demand in an uncontested market space, or a "Blue Ocean", rather than compete head-to-head with other suppliers in an existing industry. The cornerstone of Blue Ocean Strategy is 'Value Innovation'. A blue ocean is created when a company achieves value innovation that creates value simultaneously for both the buyer and the company. The innovation (in product, service, or delivery) must raise and create value for the market, while simultaneously reducing or eliminating features or services that are less valued by the current or future market. The metaphor of red and blue oceans describes the market universe.

Blue Ocean Concept for Attica Region

Eliminate some key negative factors - Eliminate the absense of internal communication and promotes common positions of its members to the national authorities for resolving issues relating to legal / regulatory framework in the field of its activity	**Reduce some negative effects of some key factors** - Decrease of production costs since businesses participating in the sector and lies can achieve economies of scale. - Desired links to geographical and vertical or horizontal level
Create new Key Features never provided before - **New eco products with local brands** - The development of a series of actions to acceptance and recording products in maker Lists of the major shipyards	**Increase some key features much above the standards** - Manufacturing firms should cooperate with University of Pireas among the region. University should provide and implement training programmes in organisational skills and consulting services on IPR - Cooperation with knowledge hubs to improve eco shipping activities, creating an umbrella of eco services (Green Ship)

Red oceans represent all the industries in existence today – the known market space. In the red oceans, industry boundaries are defined and accepted, and the competitive rules of the game are known. Here companies try to outperform their rivals to grab a greater share of product or service demand. As the market space gets crowded, prospects for profits and growth are reduced. Products become commodities or niche, and cutthroat competition turns the ocean bloody; hence, the term red oceans.

Blue oceans, in contrast, denote all the industries not in existence today – the unknown market space, untainted by competition. In blue oceans, demand is created rather than fought over. There is ample opportunity for growth that is both profitable and rapid. In blue oceans, competition is irrelevant because the rules of the game are waiting to be set. Blue ocean is an analogy to describe the wider, deeper potential of market space that is not yet explored

Implementation: A model for Regional Policy in Attica

Due to the increasing intensity in global competition; policies that have to be applied should answer the needs of the sectors, and regional competitive advantages. In order to increase competitiveness of the sectors, regional policies to be formulated should include sector members' participation and demands. This approach can be in a way contemplated as a "bottom-up" approach for policy making. Cluster policies provide a favorable environment for such designs, hidden in the clusters importance.

So, in a first stage a package of financial instruments and incentives designed and promoted, such as to fit properly to the local innovation needs and entrepreneurs profile. This will encourage stakeholders to associate in order to benefit from investment law. These opportunities should be shaped on the local data and facts. Thus, collection, structuring, analysis and understanding of local evidences have to be done. Then the competition between entrepreneurs and their investment plans with potentials should be put into place, in order to show which of them are able to discover the most reliable and profitable opportunities.

More specifically, in our region, (Attica) the main 5 steps of a feasible policy are the following:

First Step: Mapping the Region of Attica

In this first step we must:

A. Describe the most relevant economic zones in Attica
B. Present who are the most important Sectors for the regional economy
C. Analyze the regional competitive advantage
D. Examine factor conditions (Input factor): Whether high quality specialized inputs for the firm, human and capital resources, physical and administrative infrastructure, science and technology infrastructure are present or not;
E. Analyze the context for firm strategy and rivalry: Presence of a local context and rules that encourage investment and continuous improvement enhancing open competition among the firms;
F. Evaluate demand conditions: A core and sophisticated demanding customers, unusual local demand in specialized segments that can be served naturally and globally, customer need that anticipate those everywhere.
G. Describe related and supporting industries: Access to capable locally based suppliers and firms at related fields, presence of clusters instead of isolated industries.

Second Step: Nominate and Locate

We should nominate and locate all sub regions/zones geographically relative to each other (distance, infrastructure, draw a sketch map to visualize graphically the region and the constitutive typologies of sub regions, and position region of Attica in one of the three groups:
(a) Leader, (b) follower, (c) Lagging

Third Step: Creating Facilitators

Facilitator is a Public or private organization playing a catalytic role in the setting up, expansion and management of the cluster: supporting the development of the necessary synergies and interactions, mentoring, providing services (legal advice, IPR, training etc), promoting visibility, international networking and penetration of products in global markets. It provides free access to information and services to all potentially interested undertakings of the sector, members and non members of the cluster (open access one stop shop), dissemination of results and support for access to finance. The creation of Facilitators should be a crucial point and the most important factor in order to implement a feasible regional cluster policy.

Fourth Step: Implementation Modality / Methodology:

A. Basic Principles

- Initial Total Public Funding
- Maximum Public funding per cluster
- Facilitator: Joint infrastructures, provision of services
- Business firms: relocation, consultancy, innovation advisory and support services, IPR, professional training, participation to joint fairs, creation of spin offs, prototype development and demonstration projects
- Basic or industrial research activities are not eligible for funding under the Program,
- No direct support is provided to research organizations (HEIs, PROs), for activities other than the functions of the facilitator,

- Research organizations are allowed to participate as subcontractors to business firms for the implementation of experimental development projects.

Fifth Step: Expected Impact and evaluation due specific indicators:

Impact:

1. Increase investment in innovation in the Region of Attica,
2. Promote knowledge- driven entrepreneurship in high added value sectors in the Region of Attica,
3. Identify competitive advantages for the Region of Attica (existing or potential) / smart specialization
4. Promote employment of highly skilled personnel,
5. Increase of exports and private investments,
6. Networking / complementarities with innovation clusters abroad.

Performance Indicators:

- No of undertakings (SMES in particular), research and other organizations participating to the cluster
- Turnover
- Exports
- Attraction of private investments
- IPR expenditure
- No of patents/ filings for patents
- No of international trademarks
- No of quality certifications
- R&D expenditure
- Expenditure for research equipment
- No of employees PhD or Master degree holders
- No of PhD, MSC prepared
- Professional training activities undertaken
- Participation to fairs, exhibitions, brokerage events

Conclusions

Clusters are not standardized business partnerships but complex systems which, even if they might possess some common features, they could bear plenty of differences. Relationships among cluster members are not always straightforward as there might be conflicts of interests, competitive relations and different agendas.

Therefore, the creation of a cluster is not just a once–off event but usually it is a long and sometimes hard to control process. A cluster may have several degrees of integration, which correspond to different stages of implementation. If the conditions are not favorable for the emergence of clusters, more preparatory work from all partners is needed. At this preparatory phase seminars, workshops, special meetings etc. should be also used in order to stress the benefits of participating in clusters and arouse the interest of the private sector and research institutions.

According to the abovementioned, creating clusters in Greece – till 2005 - had proven to be a rather taunting task and results were far from being considered satisfactory. None of the funded clusters was developed enough in order to become viable in the absence of funding and/or widely visible to the local or national business community. Moreover, none of those clusters created a model that could be used as a leading example, a good practice for other sectors or companies.

A certain degree of "sectoral" maturity is also necessary along with a lot of preparatory work (i.e. feasibility studies, sectoral mapping, dynamics etc). There is no one-size-fits-all policy for cluster, as each sector has different aspects that need to be treated. The role of the facilitator should be highly stressed, since its role is crucial to the emergence and development of clusters. The facilitator should have thorough knowledge of the sectoral dynamics of the cluster, both at the national and international level. It should also have the ability to set out a clear strategy that serves the overall interests of the cluster, be a highly respected agent for the majority of the cluster members and be in a way detached from any individual interests of partners.

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